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Cultural Resources Surveys Conducted During December 2014 Central Eagle Ford Zone Gonzales, De Witt, Karnes, And Wilson Counties

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CULTURAL RESOURCES SURVEYS CONDUCTED DURING DECEMBER 2014
CENTRAL EAGLE FORD ZONE
GONZALES, DE WITT, KARNES, AND WILSON COUNTIES

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MANAGEMENT SUMMARY

During the month of December 2014, Goshawk Environmental Consulting, Inc. (Goshawk) conducted two cultural resources surveys within the Eagle Ford Play, Central Eagle Ford Zone at the request of EOG Resources, Inc. (EOG). The two project areas subjected to cultural resources investigations included the proposed Ginobili-Leonard Gathering Pipeline and HB Unit #1H, #2H, and #3H Access Road. Except where noted, each Area of Potential Effect (APE) was a 75-foot (23-meter [m]) wide Right-of-Way (ROW) consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement. Investigations were conducted by Goshawk archeologists Reign Clark and Scott Justen. Reign Clark served as primary author and Scott Justen and Ron Ralph served as contributing authors for this report of investigation.

The cultural resources surveys were performed according to Council of Texas Archeologists survey standards, in compliance with the Texas Historical Commission's (THC) Rules of Practice and Procedure, Chapter 26, Section 27, and under the general guidelines of the Register of Professional Archaeologists. Site files on the THC's Archeological Sites Atlas (Atlas) website database were consulted prior to the commencement of the field effort for previously recorded site locations, references to previous archeological surveys undertaken, and place names of interest in the vicinity of the proposed projects.

Streams potentially under USACE jurisdiction which cross the APEs were assessed by an ecologist via desktop and field reviews prior to commencement of the cultural resources survey. As per the established procedure of due diligence, any segment of an APE that falls within an area potentially under federal jurisdiction or any portion of an APE that falls within a 328-foot (100-m) radius of a known cultural site would be subjected to a cultural resources survey. Any segment of an APE to be surveyed under this protocol was labeled as a "review area" and was subjected to cultural resources survey.

During the survey of each project, shovel tests were placed within each review area. Shovel testing and surface inspection resulted in no significant cultural deposits documented within the survey areas. Based on these results, it is Goshawk's opinion that no significant cultural resources will be impacted by construction within the surveyed ROWs. Goshawk recommends that the projects be allowed to proceed as planned with the caveat that construction be limited to the surveyed ROWs. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted and both the United States Army Corps of Engineers (USACE) and an archeologist should be notified.

CONTENTS

1.0 INTRODUCTION

During the month of December 2014, Goshawk Environmental Consulting, Inc. (Goshawk) conducted two cultural resources surveys within the Eagle Ford Play, Central Eagle Ford Zone, at the request of EOG Resources, Inc. (EOG). The Central Eagle Ford Zone includes portions of De Witt, Gonzales, Karnes, and Wilson Counties (Figure 1-1, Vicinity Map). The project areas subjected to cultural resources investigations during the month of December included the proposed Ginobili-Leonard Gathering Pipeline and HB Unit #1H, #2H, and #3H Access Road (Figure 1-2, Project Location Map). Each Area of Potential Effect (APE) was a 75-foot (23-meter [m]) wide Right-of-Way (ROW) consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement. The results from the survey of each project are presented herein.

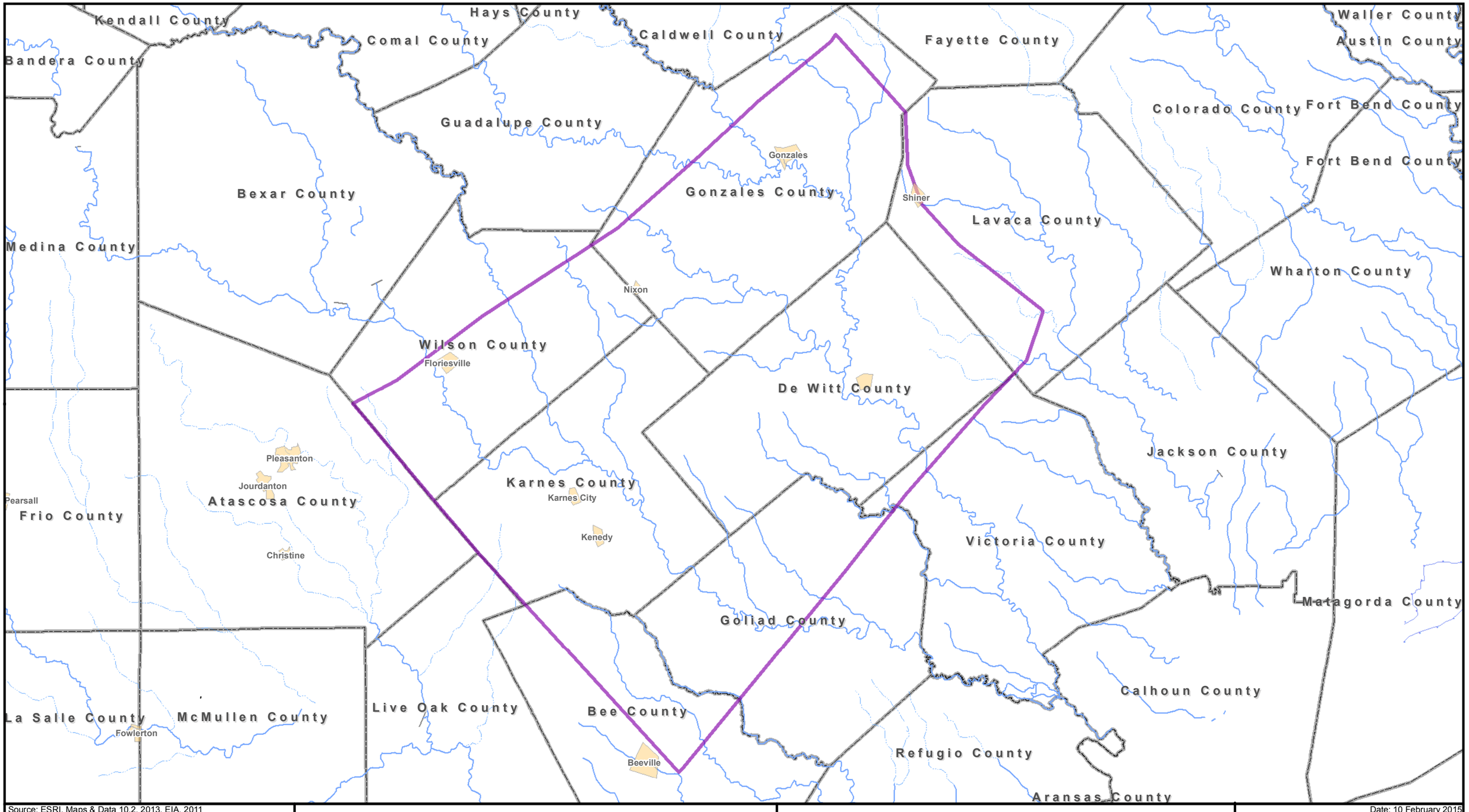
2.0 ENVIRONMENTAL CONTEXT OF THE CENTRAL EAGLE FORD ZONE

The Eagle Ford Shale Region covers a large portion of south and southeast Texas totaling approximately 22,000 square miles. This region of Texas can be broken down into zones reflecting biologic, geologic, physiographic, and cultural diversity within the Eagle Ford Shale. The Central Eagle Ford Zone is an area characteristic of the Texan Biotic Province (Blair 1950). This is a transitional vegetative zone between northern hardwoods and the southern scrubland. The Texan Biotic Province is a broad ecotonal area between the forested regions of eastern Texas and the grasslands of western and northern Texas. The region is characterized by a series of gently rolling uplands dissected by few streams and minor tributaries; and as such, riparian areas are somewhat common.

The Central Eagle Ford Zone extends south and southeast from San Antonio to the south Karnes County line. The zone extends northeastward to central Lavaca County and northwest to northern Gonzales County (See Figure 1-1). This area is crisscrossed by two major rivers; the San Antonio and the Atascosa. The San Antonio River crosses the Central Eagle Ford Zone on a west-to-east axis. Major creeks, including Cibolo, Escondido, and Ecleto Creeks, flow in to the San Antonio River, which connects with the Guadalupe River before it empties into the Gulf of Mexico. The Atascosa River traverses the zone on a roughly north-to-south axis, joining with the Frio River north of Three Rivers, Texas. The Frio River empties to the Nueces River south of town. The Atascosa is fed by numerous named creeks and their tributaries which are dry for most of the year.

2.1 LAND USE

Currently, the most common uses for land falling within the Central Eagle Ford Zone are cattle ranching, crop cultivation, oil and gas field development, and lease hunting. Many of the common land uses result in the clearing of the omnipresent invasive thorn brush so that development can proceed. The persistent problem of invading brush and cacti is often addressed by “chaining”, whereby a heavy chain is dragged across the landscape by bulldozers, uprooting unwanted brush. Additionally, large senderos are often cut through the vegetation to facilitate wildlife management and seismic surveys. Root plowing, using a large tracked bulldozer and a dragging blade, is also used to clear brush. All clearing methods are disruptive to archeological sites. Poor soil conservation practices have resulted in the depletion of top soil, exposing clay pans across some areas.



Source: ESRI, Maps & Data 10.2, 2013, EIA, 2011
Projection: NAD 1983 UTM 14N

0 5 10 20 30 Kilometers

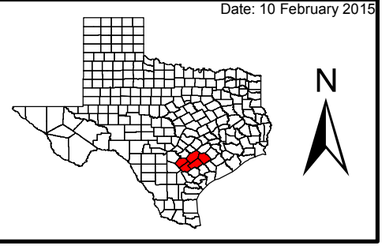
0 2.5 5 10 15 20 Miles

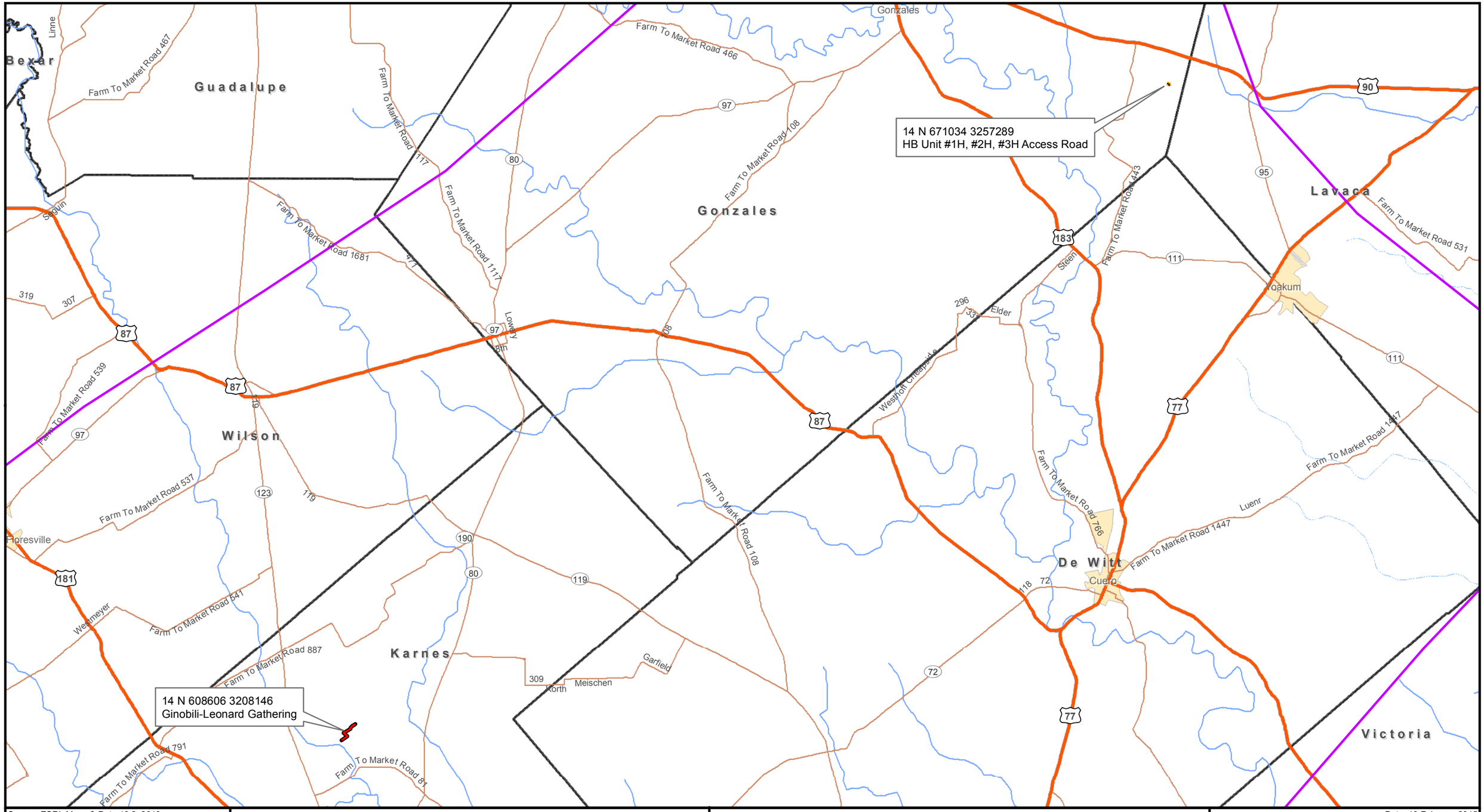
Figure 1-1
Vicinity Map

Central Eagle Ford Zone

Central Eagle Ford Zone Perimeter

Date: 10 February 2015





Source: ESRI, Maps & Data 10.2, 2013
Projection: NAD 1983 UTM 14N

0 1.75 3.5 7 Kilometers

0 1 2 4 Miles

GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Figure 1-2
Project Locations
Gonzales and Karnes Counties, Texas

Central Eagle Ford Zone

Central Eagle Ford Zone
Propsed Pipeline Alignment
Propsed Access Road Alignment

Date: 19 February 2015

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The number of higher-energy streams and increased rainfall totals over the majority of south Texas provides a greater opportunity for archeological sites to be capped by alluvial or colluvial processes. Many depositional soil types present along the rivers and major creeks within the Texan Biotic Province contain temporally stratified deposits and a higher probability for the presence of significant prehistoric sites. On upland terrain, which has been continually cleared of native vegetation, top soils have been depleted. In these areas, many of the soils originally mapped by the Natural Resources Conservation Service (NRCS) which had pronounced A-horizons no longer exhibit the characteristics of their pedogenic description. Dense chert gravel outcrop exposures are common across the uplands, while alluvium blankets many areas along creeks.

2.2 GEOLOGY AND PHYSIOGRAPHY

The Central Eagle Ford Zone is one of the most geologically diverse areas of Texas containing at least 21 mapped geologic formations. Some of the major geologic formations across the southern portion of the region include the Catahoula Formation, Oakville Sandstone, and Willis Formation (Texas Water Development Board [TWDB] 1979).

The Catahoula Formation varies in elevation from 100 to 200 feet (30 to 61 m) above mean sea level (AMSL). Soils on the Catahoula Formation tend to be light-colored with tuffaceous sands and bentonitic clays. Some areas also have local concentrations of calcareous material. The Oakville Sandstone overlays the Catahoula Formation and is a mixture of fine to medium grained sand and sandstone, ashy and sandy clay, and bentonitic clay (Griffin 2006). In addition, the Oakville Sandstone contains gravel beds comprised of Austin Chalk and fossils, as well as gravels typically found on high ridges. Oakville Sandstone dates to the Miocene (TWDB 1979).

Willis Formation dates to the Pliocene (Griffin 2006, TWDB 1979). The formation is expressed as relict high gravel deposits near major stream channels and along the edges of interfluves. Soils of the area typically contain fluviatile chert, sand, silt, and clay from the Edwards Group strata. The chert outcrops would have been of interest to native peoples as they offered easy access to lithic material.

Numerous geologic formations are banded closely together in a northeast-to-southwest orientation across the northern portion of the Central Eagle Ford Zone. The major formations include the Cook Mountain Formation, Yegua Formation, Caddell Formation, and Manning Formation. The Catahoula and Oakville Formations previously described extend into this area as well.

The Cook Mountain Formation consists of clay and sandstone. Marine fossils are common in the 200 to 230 foot (61 to 70 m) thick Eocene formation. The Yegua Formation, which forms terraces, is an Eocene age deposit of sandstone and clay. The sandstone is composed of mostly quartz with some chert. It is fine-grained and indurated to friable with a cross-bedded structure. It is calcareous with a thickness of 400 to 1,050 feet (122 to 320 m). The Caddell Formation consists of siltstone, clay, and sandstone. The 50 to 100 foot (15 to 30 m) thick Eocene formation is locally fossiliferous. The Manning Formation consists of clay, sandstone, and Plum Bentonite. This chert-like material is indurated, waxy, and expresses conchoidal fractures. Fossil wood, clay beds, and

lignite deposits are common in the 250 to 350 foot (76 to 107 m) thick Eocene formation. Both the Manning Formation and the fossil wood surface gravels would have been of interest to prehistoric populations.

Lesser formations in the area include the Reklaw Formation, Weches Formation, Fleming Formation, Wellborn Formation, and Whitsett Formation. Also present are three separate bands of sand formations. These include Carrizo Sands, Sparta Sands, and Queen City Sands.

Fluviatile terrace deposits and fluvial sediments are mapped throughout the Central Eagle Ford Zone in the vicinity of larger creeks and rivers. The fluviatile terrace deposits of Pleistocene age are remnants of ancient floodplains. During the Pleistocene, streams flowed between 25 and 50 feet (8 and 15 m) higher than at the present time. These terraces are located above the Holocene-aged alluvial deposits. Later Holocene-aged fluvial sediments are deposited through alluvial deposition on floodplains, levees, and lower terraces within flood zones (Griffin 2006). Many of the major waterways in the region have fairly broad floodplains. The Guadalupe River in particular has a floodplain between 2 and 5 miles (3.2 and 8 kilometers [km]) wide in places. Broad floodplains such as this one are indicative of greater water depths and volumes earlier in the Holocene. Quaternary floodplain deposits consist of gravel, sand, clay, silt, and organic material. These recent gravel deposits may have provided raw material for prehistoric peoples in search of tool-making stone.

2.3 Project Area Soils

The Web Soil Survey of the Natural Resources Conservation Service (NRCS 2014), the De Witt County Soil Survey (Miller 1978), the Gonzales County Soil Survey (Griffin 2006), the Karnes County Soils Survey (Molina 1999), and the Wilson County Soil Survey (Taylor 1977) were consulted for each project within the Central Eagle Ford Zone. Generally, soils encountered consist of clay, clay loam, and sandy loam along benches and terraces adjacent to smaller streams. Sometimes very deep sandy alluvium is found along the banks of the larger rivers crossing this zone. In situ clay soils are commonly found on the wider floodplains of named creeks. Occasionally, expansive outcrops of chert gravels and cobbles are found on eroded uplands and shoulder slopes which prehistoric native groups used as raw material quarries for tool-making. These outcrops are most common on high uplands along the Guadalupe River.

2.4 Flora and Fauna

Within the Central Eagle Ford Zone, native tree species include mesquite, huisache, pecan, live oak, Texas wild olive, and Texas persimmon. Common shrubs and succulents in the region include prickly pear, fiddlewood, desert yaupon, agave, yucca, and autumn sage. Native grass species include sideoats grama, slender grama, buffalo grass, inland sea-oats, plains lovegrass, and little bluestem (Gould 1978; TPWD 2014a). In the Texas Biotic Province, rainfall totals are barely in excess of water need (Blair 1950). Traditionally clayey soils supported vast grasslands but much of the native grass areas have been decimated by recent land management practices. Alluvial soils along major drainage ways support trees such as hackberry, pecan, and a variety of oaks; among other hardwoods.

There are at least 61 mammal species, 57 reptile species, and 22 amphibian species within the Central Eagle Ford Zone (Schmidly 2004). Common small mammals in the region include several species of rats, mice, and bats; the Texas pocket gopher; the eastern mole; the eastern cottontail rabbit; and the Mexican ground squirrel (Blair 1950). Medium to large mammals include white-tailed deer, American hog-nosed skunk, and armadillo. Another of the mammalian species located in the ecoregion is the Mexican opossum, also the only marsupial in the ecoregion. Rare or extinct mammalian species in the area include ocelot, jaguar, javelina, bison, and jaguarondi (TPWD 2014b). Reptile species within the region include the western box turtle, Texas banded gecko, Texas spiny lizard, red racer, western diamondback rattlesnake, and diamond-backed water snake (Blair 1950, TPWD 2014a). Rare reptilian species include the Texas tortoise, indigo snake, and Texas horned lizard (TPWD 2014b). Despite the drier climate within the Tamaulipan, the region is host to several water-loving urodeles (salamanders and newts) and anurans (frogs and toads) (Blair 1950; Davis 1978). There are three species of urodeles and 18 species of anurans. Raptors, songbirds, doves, gulls, and terns are the dominant birds near the APE (Bryan et al. 2006). The rare Cactus Ferruginous pygmy-owl is also occasionally found within the ecoregion (TPWD 2014a, TPWD 2014b).

2.5 CLIMATE

The Central Eagle Ford Zone exhibits a subtropical, mild climate. Average temperatures range from a high of 96.8 degrees Fahrenheit in August to a low of 63.7 degrees Fahrenheit in January. The yearly average is 81.9 degrees Fahrenheit. Temperatures can reach 104 degrees Fahrenheit or drop as low as 15 degrees Fahrenheit. Average rainfall is approximately 29 inches (74 centimeter [cm]) per annum. The greatest amount of rainfall occurs during May, June, September, and October averaging 3.5 inches (8.9 cm) per month. The growing season ranges between 222 days and 351 days in duration.

3.0 CULTURAL CONTEXT OF THE CENTRAL EAGLE FORD ZONE

The Central Eagle Ford Zone is located in the South Texas Archeological Region where nomadic hunter-gatherer groups migrated seasonally, following resources and sharing cultural traits with other groups. This is evidenced in the dispersal of point types and ceramic styles across the region (Prewitt 1995). Open camps are the most common type of archeological site found in the South Texas Archeological Region. Open camps can be shallow or deeply buried and are often adjacent to streams and usually contain clustered archeological material such as burned rocks, lithic debris, hearths, or middens. Bone and shell are less common in the assemblages, as organics rarely survive due to the alkaline nature of the soils.

Notable work in south Texas archeological research has been conducted by Fox, et al. (1974), Mallouf, et al. (1977), Mercado, et al. (1996), Hall, et al. (1986), Black (1989), and Hester (1980). However, the lack of intensive investigations, high rate of looting, and levels of erosion that occur throughout south Texas have left barriers to fully understanding and dating the periods of occupation in the area (Perttula 2004).

The following cultural background is divided into several periods in this portion of the state: Paleoindian (9,500 to 6,000 B.C.), Early Archaic (6,000 to 2,500 B.C.), Middle Archaic (2,500 B.C. to A.D. 400), Late Archaic (A.D. 400 to 700), Late Prehistoric (A.D. 700 to 1750), and Historic (A.D.

1750 to present) (Aten 1983; Perttula 2004; Turner and Hester 1999). Some scholars include another period, the Protohistoric, but it will not be included here due to the lack of a useful definition and contextual information available in this region.

3.1 PREHISTORY

3.1.1 Paleoindian Period (ca. 9,500 to 6,000 B.C.)

Recent archeological evidence indicates prehistoric people may have occupied this area prior to the Paleoindian Period. However, the controversial sites that show evidence of an earlier period of habitation have not yet been widely accepted by the archeological community. For this reason, the prehistoric period will begin with Paleoindians.

Beginning around 9,500 B.C., the Paleoindian is the earliest identified cultural period in the vicinity of the Central Eagle Ford Zone. It spans over 3,000 years to about 6,000 B.C. (Ensor and Ricklis 1998). According to some authors, the Paleoindian period begins approximately 1,200 years earlier (11,500 B.C.) further to the south in the South Texas region. It has been postulated that this is most likely due to the earlier habitation of the Paleoindian Clovis peoples coming north from central Mexico (Perttula 2004).

Coinciding with the decline of the Wisconsin glaciation, the Paleoindian period is characterized by a relatively cool, moist climate that encouraged the development of now-extinct species of Pleistocene megafauna, such as bison. This period is sometimes called the Big Game Hunting tradition (Willey 1966), due to a presumed heavy reliance by Paleoindian peoples on megafauna as a food source during the earlier portion of the period. Environmental changes that brought about the extinction or dislocation of megafauna precipitated a shift toward smaller game, creating the transition into the Archaic (Aten 1983:146-148; Willey and Phillips 1958:107).

Temporally diagnostic tool types attributed to this period include a variety of finely chipped, sometimes fluted, lanceolate projectile point styles, such as Clovis, Folsom, Plainview, and Scottsbluff (Meltzer and Bever 1995; Prikryl 1990; Willey 1966). The Paleoindian projectile point types show a transitional change between the earlier Paleoindian points and the Early Archaic. By the late Paleoindian period, unfluted lanceolate projectile points such as Plainview, Golondrina, and Angostura were more common (Story, et al. 1990).

3.1.2 Archaic Period (6,000 B.C. to A.D. 400)

Following the close of the Pleistocene, the South Texas region experienced a trend toward a warmer and drier climate. It has been postulated that this climate shift was at least partially responsible for the extinction of megafaunal species. The archeological record of this period exhibits evidence of a gradual diversification in subsistence patterns. This is the beginning of the Archaic, which lasts from about 6,000 B.C. to A.D. 400 (Aten 1983:152-157). The Archaic period is divided into three time periods: the Early Archaic (6,050 to 2,500 B.C.), the Middle Archaic (2,500 B.C. to 1,000 B.C.), and the Late Archaic (1,000 B.C. to A.D. 400) (Perttula 2004; Turner and Hester 1999). Few Archaic sites are recorded on the Upper Texas Coast (Aten 1983:153; Story 1985:28-29). Story (1985:31–34) suggests site density was low on the coastal plain during this period. Archaic sites tested or excavated near the modern shoreline generally consist of shell-

bearing sites with varying degrees of lithic tools and debitage, shell or bone tools, and the bones of fish, mammals, and reptiles (Ambler 1967, 1970, 1973; Aten 1979, 1983; Ensor 1998; Howard et al. 1991). Inland sites tend to contain more lithic artifacts and debitage with terrestrial mammal bones comprising the bulk of the inland faunal assemblages. Archaic patterns in tool-making for the South Texas region are centered on corner-notching technology and triangular points, moving away from the basal-notching technology.

3.1.2.1 Early Archaic Period (6,000 to 2,500 B.C.)

Late Paleoindian unfluted lanceolate projectile points such as Plainview, Golondrina, and Angostura were replaced by un-stemmed triangular points and basal or corner notched points in the Early Archaic. The Early Archaic in the South Texas region is significantly shorter than in other regions due to the onset of specific regional cultural patterns occurring around 2,500 B.C., which emphasized un-stemmed dart points and smaller bifacial and unifacial beveled tools (Perttula 2004). In addition to these cultural patterns, the archeological record shows the diet of the people in this area consisted of turtles, snails, and freshwater mussels. Land snails (*Rabdotus* sp.) are often present at prehistoric sites, but there is debate regarding whether the prehistoric peoples were consuming them or if the snails were merely "cleaning up" after the group moved out of the area.

3.1.2.2 Middle Archaic Period (2,500 to 1,000 B.C.)

For the South Texas region, the Middle Archaic is more thoroughly represented in the archeological record than the Early Archaic. It is during this time period that the triangular Tortugas and Abasolo points were developed. In addition, the archeological record shows the development of smaller, unifacial, distally beveled tools that show a high amount of reworking and resharpening. Evidence supports that these common tools were used in wood-working (Perttula 2004). During this period, most open campsites were placed in flood-prone zones along low terraces, and while information concerning their diet is scant, numerous types of fuel materials have been identified including mesquite, acacia, oak, and hackberry (Perttula 2004). There is also significant data concerning treatment of the dead in this area and timeframe (Patterson et al. 1998). Especially later in the period, cemeteries were commonly used, most of which contained grave goods such as points, flakes, cores, and sandstone pieces (Perttula 2004; Hall et al. 1986). One such cemetery, Loma Sandia, is dated to the late Middle Archaic and is located in Live Oak County (Taylor and Highley 1995). With its hundreds of burials and thousands of artifacts, it remains one of the most studied archeological sites in South Texas.

3.1.2.3 Late Archaic Period (1,000 B.C. to A.D. 400)

In general, Late Archaic sites in the South Texas Region show a marked increase in site utilization and heavy dependence on seasonal base camps, where various maintenance, extractive, and processing tasks were used in exploiting local resources. Assemblages characterizing these technological activities include a variety of dart point styles, a suite of ground and polished stone tools, and the beginning use of ceramics.

3.1.3 Late Prehistoric Period (A.D. 400 to 1750)

The Late Prehistoric period in the south Texas region saw a continuation of many of the same cultural and subsistence patterns in place during the Late Archaic (e.g. cemeteries and burned rock features) with two very significant technological adaptations: a heavier reliance on ceramics by certain groups and the introduction of the bow and arrow (Ensor 1998).

3.2 HISTORIC PERIOD (A.D. 1750 TO PRESENT)

3.2.1 Historic Native Groups in the Area

Early Spanish expeditions in Texas afford the primary evidence of the relevant historic Indian tribes in the south Texas region during the late sixteenth through early eighteenth-centuries. Initial exploration of the Gulf of Mexico and the American Southwest was accomplished by Spanish explorers Alonso Alvarez Piñeda (1519) and Alvar Nunez Cabeza de Vaca (1528). Following Piñeda's initial maritime effort to map the Gulf Coast, the earliest exploration of the south Texas region was accomplished by de Vaca, who shipwrecked in the Gulf of Mexico in 1528 along with other members of an expedition led by Pánfilo de Narváez (Weddle 1985).

De Vaca's account served as the basis upon which subsequent explorations of the region were conducted by Hernando de Soto (1539) and Luis de Moscoso (1542). By 1561, Spain was facing increasing difficulties in maintaining its few colonies in Florida. The relatively poor economic prospects for these colonies and increasing competition from other colonial powers quelled the Spanish Crown's interest in colonizing their Florida territories which included Texas. As a result, the Texas Gulf Coast remained relatively uninhabited by Europeans for the next two centuries until the threat of increased French exploration in the territory stimulated the Spanish government to establish more permanent settlements in the area (Weddle 1991). In 1685, René Robert Cavelier and Sieur de la Salle established Fort St. Louis along the Gulf Coast (Gilmore 1984, Tunnel and Ambler 1967). Plagued by disease, starvation, and Indian attacks, Fort St. Louis was no longer in use by late 1688 or early 1689 (Bruseth and Turner 2005).

Spanish expeditions to the south Texas region include the 1689 expedition of Governor Alonso de León, the 1691 to 1692 expedition of Governor Domingo Terán de los Ríos, the Espinosa-Olivares-Aguirre expedition of 1709, Ramón's expedition of 1716, Alarcón's expedition of 1718, and Rivera's inspection tour of 1727 (Campbell 1983; Foster 1995). The Indians encountered during those journeys included indigenous Sanan speakers and displaced and migrating tribes from well outside the region such as the Jumano of west Texas, the Wichita-speaking Yojuane of north central Oklahoma, and the Simaomo and Tusonibi of northeastern Mexico (Campbell 1979). Many other tribes, not so fortunate, had been decimated by European disease in Coahuila and Nueva Leon according to Chapa, an early historian who documented over 160 groups annihilated during the 1600s (Foster 2008:108).

3.2.2 European Settlement (ca. 1750)

Although there were no permanent Spanish settlements established in the area now known as La Salle and McMullen Counties, Spaniards did traverse the area at various times. Alonso De León passed through the area in 1689 and 1690, as did Diego Ortiz Parrilla in 1766. In the early 1800s, the Old Laredo-San Antonio road passed to the east of the survey area. Even earlier, a large

waterhole on Esperanza Creek was the meeting place where presidio soldier escorts passed off their charges before returning to their posts in Laredo and San Antonio (Leffler 2014).

3.2.3 Anglo Settlement

After Spain recognized Mexico's independence in the early nineteenth century, the first land grants were issued by the Mexican government to encourage foreign settlement. Two empresario land grants went to Stephen F. Austin and Green C. DeWitt. It wasn't originally Stephen F. Austin's desire, but that of his father's, Moses Austin, to become an empresario in Spanish Texas. In 1820, Moses had been in negotiations with Governor Antonio María Martínez. When Moses offered a proposal to bring 300 colonial families to Texas, his offer was flatly rejected, due to omissions reflecting little understanding of Spanish colonial law. Moses returned with the Baron de Bastrop, second alcalde of Bexar, and a revised proposal (Moore 2014). With the Baron's help, Moses was granted permission to begin colonization of Texas. Moses Austin died before a single colonist was brought to Texas from the east.

Moses' dream of colonization would come to fruition under his son, Stephen Fuller Austin. In December of 1821, Austin began bringing the first families to settle on the Austin land grants. For each married head of household, a grant comprised of one league (4,428 acres) and one labor (177 acres) of land would be issued. Unmarried males were eligible for a single land grant of one-third league (1,476 acres). While grant selection began in late 1821, actual titles were not issued by Mexican authority until mid-summer 1824. Austin would be awarded two additional large empresario grants expanding his colony along the Brazos, Colorado, and Trinity Rivers.

In January 1825, confident that a grant would be awarded, Green C. DeWitt appointed James Kerr to survey his colony and its capitol. Kerr and his assistants built cabins near a creek that to this day is called Kerr's Creek. This group became the first Anglo community west of the Colorado River (Baumgartner and Vollentine 2014). In April 1825 empresario Green DeWitt was authorized by the Mexican government to settle 400 families between the Guadalupe and Lavaca Rivers. These pioneers began landing at the mouth of the Lavaca River which became the site of the Old Station settlement (Roell 2014a) about 6 miles from the mouth of the Lavaca River. However, the Mexican government refused their request to remain at Old Station and late in 1827 some settlers returned to the original Gonzales townsite surveyed by Kerr (Baumgartner and Vollentine 2014). These settlers enjoyed relative peace and a treaty with the Karankawas was negotiated in 1827. Tonkawa raids were only occasional, and boundary disputes with De León's colony to the south were settled without bloodshed. The only towns in the area were Gonzales, Guadalupe Victoria to the south, and Bexar (the seat of government) to the northwest (Roell 2014). Within three years more than 100 families, primarily from Tennessee, Kentucky, Missouri, and other southern states, had arrived to settle in DeWitt's colony (Baumgartner and Vollentine 2014).

Unfortunately, the Mexican government refused to recognize Kerr as the official surveyor, and Byrd Lockhart was appointed in 1831 to resurvey the Gonzales townsite. In 1831, Gonzales colonists (population of 532) convinced the Mexican government to send a canon for protection against Indian raids (Baumgartner and Vollentine 2014). The Mexican government complied by sending a

small signal cannon to the settlers. This “fieldpiece” would later be at the center of the beginning of the war with Mexico for Texas

3.2.4 Texas Revolution and the Runaway Scrape

Mexico continued in the tradition of Spain with regard to the settlement of Texas. Few Mexican colonies were established by the government within the area. However, Mexico was more willing to grant land to Anglo-Americans in their territory, increasing settlement throughout the territory, and especially the coastal plain area where land was fertile and less likely to have Indian problems. Between 1832 and 1835, several problems began to arise between the Anglo-American settlers and the Mexican government (Barker and Pohl 2014). Adding to the growing tensions, Antonio López de Santa Anna was elected president in 1833 and declared a dictatorship in 1834 (Callcott 2014). His military force and personal policies seemed to encourage the displacement of the Anglo-American settlers through political action and veiled threats (Barker and Pohl 2014). Tension between Anglo settlers and the Mexican government remained high until 1835 when dissatisfaction with Mexican rule came to a head at Gonzales.

According to the historical monument on Highway 97 West just south of Gonzales, the first shot of the Texas Revolution was fired 2 October 1835 from the small cannon which Mexican forces were trying to take back from the colonists. After a short skirmish and attempts between the Mexican leader Francisco de Castañeda and the head of Gonzales’ forces, John Henry Moore, to settle the disagreement, Mexican troops withdrew in an attempt to prevent all-out war (Hardin 2014). However, distrust between the Mexican government and Anglo-American settlers in Texas by this time had become so great that instead of preventing war, the Texas Revolution began (Barker and Pohl 2014).

After the Battle of Gonzales, Stephen F. Austin, James Bowie, and James W. Fannin, Jr. led a troop of volunteers toward San Antonio and set up a defensive position along the San Antonio River (Barker and Pohl 2014). The Texan army was quite successful at fending off Mexican advances and even seized San Antonio; however their lack of organization and discipline created major military problems. Several of the men decided to split off from the main group, essentially fracturing an already small army. It was not until 2 March 1836 at Washington-on-the-Brazos that a convention voted for Texas independence. Sam Houston was appointed the major general of the Texas fighting force.

Between the Battle of Gonzales and the declaration of independence, Santa Anna decided to deal with the insurgents by treating them as pirates. By labeling the rebels as pirates, Santa Anna was allowed to handle them outside the rules of war and without mercy (Barker and Pohl 2014). Santa Anna began his march to San Antonio early in 1836, amassing an army of 8,000 men. Although Santa Anna met problems related to weather and food, he arrived in San Antonio on 23 February 1836. The Alamo fell after 13 days of siege. All of the defenders were killed; only 30 women, children, and blacks were left alive. Although the bloody way Santa Anna dealt with the defenders of the Alamo initially instilled fear in the Texans, the events in San Antonio would later become a rallying cry.

At the same time Santa Anna was busy with the Alamo, General José de Urrea was fighting his way toward where Fannin was stationed in Goliad (Barker and Pohl 2014). Although Fannin attempted to escape and move toward Sam Houston's location, his troops were overwhelmed by the Mexican army. After negotiating surrender terms, Fannin and his men were taken back to Goliad and imprisoned. Despite assurances by one of Santa Anna's officers that they would be treated as prisoners of war, Santa Anna felt they should be executed. The sentence was carried out on 27 March 1836, and 342 men, including Fannin, were killed (Davenport and Roell 2014). Because the Mexican army took the prisoners to a field near a tree line for execution, 28 men were able to escape. In addition, another 20 were spared due to their skills as physicians, orderlies, interpreters, or mechanics.

Houston arrived in Gonzales around the time of the Goliad Massacre (Barker and Pohl 2014). There he learned of the fall of the Alamo and the advancement of the Mexican army towards Gonzales from Susanna Dickinson, wife of an Alamo defender. He decided to retreat, burning the town to the ground to prevent the Mexican army from being able to use anything. Houston also sank his cannons in the Guadalupe River since he lacked transport for them. In what was later known as the Runaway Scrape, he and numerous others began to make their escape toward the Colorado River with refugees from south-central Texas (Barker and Pohl 2014, Covington 2014). This flight took Houston and his army through Gonzales, Lavaca, Colorado, Austin, Waller, and Harris Counties (www.latinamericanstudies.org 2014).

Originally, Santa Anna believed that the Alamo and Goliad were proof that the war was over (Barker and Pohl 2014). It was only at the insistence of his officers that Santa Anna decided to pursue the Texan army. However, upon learning the President, David G. Burnet, and his cabinet had fled New Washington for Harrisburg, Santa Anna changed objectives and began pursuing the political party. By the time Santa Anna arrived in Harrisburg, Burnet and his group had fled. Unknown to Santa Anna, he and Houston were both heading toward Lynch's Ferry (near modern-day Lynchburg). The two armies met in a brief clash on 20 April 1836. Santa Anna decided to pull back and wait for reinforcements despite the fact that his army numbered approximately 13,000 to Houston's 900. Houston launched a surprise attack on 21 April 1836. In a battle that lasted 18 minutes, Houston and his men managed to kill, scatter, and capture Santa Anna's entire army, while only losing nine men. The war was officially over with the two treaties of Velasco that were signed on 14 May 1836 (Barker and Pohl 2014, Barker 1901). Troops withdrew 26 May 1836.

3.2.5 Post Revolution

After the Texas Revolutionary War, Texas remained an independent nation until its annexation into the United States in 1845 (Bauer 2014). Texas' annexation, attempts at purchasing northern California, and continued disputes with Mexico over the border between Texas and Mexico ultimately led to the Mexican-American War in 1846. After several political and subtle military attempts to secure the Rio Grande as the border, President Polk finally ordered General Zachary Taylor and his men to the Rio Grande. Mexico interpreted this as a declaration of war and attacked Taylor's army on 25 April 1846. Polk used the incident to secure a declaration of war from congress, which was given on 13 May 1846.

On 9 March 1847, the United States launched its first large-scale amphibious assaults at Veracruz, Mexico, under Commodore David Conner and General Winfield Scott (Bauer 2014). Scott began the march to Mexico City. He received reinforcements from Colonel John Coffee Hays in Puebla who led a contingency of Texas Rangers. Upon arriving in Mexico City, Scott began attacks on the city and outlying towns. The final assault began on 13 September and ended on 14 September 1847. Although Santa Anna escaped, the Mexican government essentially collapsed. Due to the lack of government, it was not until February 1848 that a functioning governing body could be formed in Mexico and the Treaty of Guadalupe Hildago could be signed. With the end of the Mexican-American War, the United States gained California, Arizona, and New Mexico along with portions of Utah, Nevada, and Colorado. In addition, the Rio Grande was officially established as the Texas-Mexico boundary.

3.2.6 Karnes County

Karnes County was first settled by Europeans around April 1758 when the first land grant was given to Andrés Hernández and Luis Antonio Menchaca (Long 2014). Around 1770, Fuerte de Santa Cruz del Cibolo was established near the settlement to provide protection from attacks by native groups. However, by 1783, the fort had come under repeated Comanche attacks and much of the area was abandoned.

Throughout the early nineteenth-century, the area gradually grew in population (Long 2014). The first Anglo-American settlers began to arrive in the region at this time, and by 1852, they had established a settlement at Helena, Texas. The town of Helena, founded by Thomas Ruckman and Lewis S. Owings, was originally the site of a Mexican settlement, known as Alamita, which had previously been abandoned. Helena's location was a great boon to the settlers in the area. The town was located on a bend of the San Antonio River, where the Chihuahua Trail and the wagon road from Gonzales to San Patricio met, increasing the opportunities for trade and growth. The growth of the town, and region in general, led to Ruckman and Owings petitioning for the creation of a new county. On 4 February 1854, the Texas legislature recognized Karnes County, which was created from portions of Bexar, Gonzales, DeWitt, Goliad, and San Patricio Counties.

The residents of Karnes County mainly focused on livestock ranching before the Civil War (Long 2014). By 1858, tax assessment rolls indicated some 50,000 head of cattle and 2,000 head of horses were present within the county. In addition to livestock ranching, Polish immigrants focused on growing a wide variety of crops, including corn, melons, potatoes, cucumbers, and pumpkins. Agricultural practices changed in the mid-1880s with the arrival of railroads. Farmers and ranchers of the area suddenly had improved access to markets and the farming economy became more diversified. By the turn of the century, the principle crops of the area included cotton, sorghum, and potatoes.

In 1894, the county seat was moved to where the new railroad town of Karnes City was located. Karnes City remains the county seat of Karnes County to this day. Agricultural crops continued to change and vary through time. In the 1930s, boll weevils began to appear in the South, causing cotton production to drop. By 1990, approximately 80 percent of the income from Karnes County

was from ranching. Agricultural crops increased in variety and included peanuts, peas, broom corn, onions, small grains, guar, and winter legumes.

3.2.7.1 Panna Maria

As previously mentioned, a large Polish population began settling in Karnes County in the mid-nineteenth-century. The oldest permanent Polish colony in America is located in Karnes County, Texas (THC 2014a). Over 100 European families journeyed to Texas in 1854, landing in Galveston, Texas, after nine weeks at sea. The families, including 800 women, men, and children, walked over 200 miles to the present day location of Panna Maria.

Economic, ethnic, and national turmoil in Europe drove Polish immigrants to Texas, pursuing the promise of new beginnings in the United States. A Polish priest, named Father Leopold Moczygemba, ministered in the German community of New Braunfels and throughout central Texas (THC 2014a). There he saw the opportunities available to newly arrived German immigrants, giving him the idea to bring his fellow Polish countrymen to Texas to escape the chaos in Europe.

Today, Panna Maria is still a small community, but many of its residents are decedents of the original settlers. A pride in one's Polish heritage was first fostered among the original settlers and is still evident in the community today.

3.2.7.2 Gillett

The town of Gillett, Texas is located a mile south of the project APE. The town was first settled by Carl Edward Riedel who built a pioneer dam in 1869 to power his sawmill, gristmill, and ginning operation (THC 2014b). The following year a steam gin, the first in Karnes County, was installed, as well as a series of barracks to house United States soldiers (THC 2014b). By 1873 a town had emerged and was named Riddleville in honor of the founding pioneer, Carl Edward Riedel. The name was changed in 1905 to its current name, Gillett. Toward the end of the nineteenth-century, the town of Riddleville was one of the five principle population centers in Karnes County (THC 2014a).

3.3 Cultural Resources of the Central Eagle Ford Zone

Gonzales County currently lists more than 250 recorded archeological sites. According to the Atlas, five sites have been designated as State Antiquities Landmarks (SALs) including, the Leesville Schoolhouse, Fort Waul, Gonzales County Museum and Amphitheater, Gonzales County Jail, and Gonzales County Courthouse. All of the SAL-designated properties are also listed on the national Register of Historic Places (NRHP) with the exception of Fort Waul. There are a total of 9 listed NRHP sites in Gonzales County. Neighborhood surveys have resulted in the addition of over 1,200 historic structures to the database for Gonzales County. There are at least 65 recorded historic cemeteries and 128 historical markers in the county (THC 2014b).

De Witt County currently lists more than 316 recorded archeological sites, many listings the direct result of surveys initiated by the recent expansion of oil and gas exploration. According to the Atlas, only one site has been designated as a SAL in De Witt County, the De Witt County Courthouse in Cuero, Texas. The county courthouse is one of 58 listed NRHP sites in De Witt

County. Neighborhood surveys have resulted in listing over 1,700 historic structures to the database. There are 60 recorded historic cemeteries and 95 historical markers in the county (THC 2014b).

Currently, there are more than 215 recorded archeological sites in Karnes County with only one of those sites listed as a SAL. The Karnes County Courthouse is listed both as a SAL and a NRHP property. There are two other NRHP listings in the county including the John Ruckman House and the Panna Maria National Register District (NRD). An additional 18 historic homes have been added to the THC database as a result of neighborhood surveys. There are 24 recorded historic cemeteries and 30 historical markers in the county (THC 2014a).

Wilson County lists more than 125 recorded archeological sites. According to the Atlas, there are two properties which have been designated as SALs in Wilson County; the Wilson County Courthouse and Jail in Floresville, Texas and the Rancho de las Cabras State Historical site. Both sites are also listed on the NRHP, along with the Polley Mansion and the Mueller Bridge. The Wilson County Courthouse was designed by architect, Alfred Giles. The structure was completed in 1884 and was a two story stucco brick structure with Italianate architectural elements. There are 137 recorded historic cemeteries and 57 historical markers in the county (THC 2014a).

4.0 METHODOLOGY

The cultural resources surveys were performed in compliance with the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470 et seq., P.L. 89-665, 80 Stat. 915), and the implementing regulations 36CFR800. The surveys complied with the National Environmental Policy Act (NEPA) of 1969; the National Environmental Policy Act of 1974 (PL 81-190, 83 Stat. 915, 41 USC 4321, 1970); the Archeological and Historic Preservation Act of 1974 (PL 93-291); the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 Fed. Reg. 44716-42, Sept. 29, 1983); the National Register Bulletin Series of the National Park Service; and the Archaeological Resources Protection Act of 1979. The surveys conformed to standards of the United States Department of the Interior (1977) and the guidelines set forth by the Council of Texas Archeologists (1995) and the Register of Professional Archeologists (2014). Cultural resources investigations consisted of archival research, pedestrian survey, shovel testing, and preparation of a report suitable for review by the United States Army Corps of Engineers (USACE), the regulatory agency responsible for oversight in most situations.

Streams potentially under USACE jurisdiction which crossed project alignments were assessed by an ecologist via desktop and field reviews prior to commencement of the cultural resources survey. As per the established procedure of due diligence, any segment of an alignment that falls within an area potentially under federal jurisdiction or any portion of a project alignment that falls within a 328-foot (100-m) radius of a known cultural site would be subjected to a cultural resources survey. Any segment of a project alignment to be surveyed under this protocol would be labeled as a "review area" and subjected to cultural resources survey. Except where specified in descriptions below, project alignments consisted of a 75-foot (23-meter) wide ROW. ROWs consisted of a 50-foot (15-m) wide permanent easement and a 25-foot temporary construction easement.

During each survey effort, the ground surface of the proposed project alignment was visually inspected on foot within the established review areas. Shovel tests were administered in the portions of the review areas which harbored the greatest potential for temporally stratified soil deposits. Shovel tests, typically 12 inches (30 centimeter [cm]) in diameter, were excavated to sterile substratum. The shovel probe matrix was sifted through ¼-inch (0.6-cm) hardware cloth. If soils of high clay constituency were encountered, the matrix was hand sorted. Shovel test locations were recorded with hand-held Global Positioning System (GPS) units and transferred to topographic maps. If present, newly discovered or revisited sites were documented using standard State of Texas site recording forms and plotted by GPS coordinates for entry into the Atlas database. Shovel testing was conducted to ascertain the horizontal and vertical limits of any cultural manifestation discovered within the review areas. Hand-drawn sketch maps were produced for each cultural site recorded or revisited. The field efforts reported herein were performed on private property and was funded by a private source. No artifacts were collected during the survey. If present, artifact assemblages would be photographed in the field and left where found.

5.0 GINOBILI-LEONARD GATHERING PIPELINE

Goshawk conducted a cultural resources survey of the proposed ±6,899-foot (2,103-m) Ginobili-Leonard Gathering Pipeline ROW in Karnes County, Texas. Three review areas were identified within the proposed ROW. One review area contained a first-order tributary of Cibolo Creek (Review Area 3), and two were located in the vicinity of Horizontal Directional Drill (HDD) locations; one located southwest and one located northeast of Cibolo Creek (Review Areas 1 and 2). The cultural resources survey, including shovel testing and surface inspection, was conducted within each review area totaling approximately 1.4 acre (0.6 ha). The field investigation was conducted in two phases by Goshawk archeologists Reign Clark and Chris Heiligenstein on 17 June 2014 and by Scott Justen with Mitch Juenke on 22 December 2014.

The Ginobili-Leonard Gathering Pipeline APE was located approximately 2.75 miles (4.3 km) to the north of the town of Panna Maria, Texas and 0.4 mile (0.6 km) northwest of the intersection of County Road 254 and Farm to Market Road 2724. The APE traversed generally west-to-east crossing undulating upland and lowland terrain. The vegetation within the ROW consisted of mesquite, large pecans, clover, cactus, oaks, various grasses, and forbs. The APE was located on the Karnes City, Kosciusko, Texas, United States Geological Survey (USGS) topographic quadrangle (Figure 5-1). The dominant local land use was for rangeland and oil and gas development.

5.1 ARCHIVAL RESEARCH

Archival research conducted using the Atlas online database did not identify any previously recorded archeological sites situated within a 1.2-miles (2.0-km) radius of the APE. The nearest sites (41KA43, 41KA44, and 41KA45) are located approximately 1.6 miles (2.6 km) west of the APE and will be discussed in detail below. All three of these sites were documented in 1977 as part of the Panna Maria II Survey Project. The Panna Maria NRD is located approximately 2.5 miles (4 km) southwest of the APE. According to the Atlas, the nearest NRHP-listed property is the John Ruckman House, located 5.2 miles (8.3 km) southeast of APE.

5.1.1 Site 41KA43

Site 41KA43 was documented as an undifferentiated prehistoric lithic quarry (THC 2014b). The site measured 492 by 492 feet (150 by 150 m) in size and was mapped along the slopes and hilltop of an upland landform northeast of Cibolo Creek. The prehistoric artifact assemblage included primary flakes, core fragments, one biface gouge, and chert chunks. The initial evaluation concluded that the site was not eligible for designation as a SAL or listing on the NRHP.

5.1.2 Site 41KA44

Site 41KA44 was documented as an Archaic lithic scatter (THC 2014b). The site measured 50 by 50 feet in size (15 by 15 m). The site was mapped along the slopes of an upland landform north east of Cibolo Creek. The prehistoric artifact assemblage included one undifferentiated Archaic point, a core, secondary flakes, and primary flakes. The initial evaluation concluded that the site was not eligible for designation as a SAL or listing on the NRHP.

5.1.1 Site 41KA45

Site 41KA45 was documented as an Archaic open campsite (THC 2014b). The site measured 148 feet (45 m) east-to-west by 66 feet (20 m) north-to-south. The site was mapped along the edge of a high terrace south of a high knoll and north of an unnamed tributary of Cibolo Creek. The prehistoric artifact assemblage included an Abosolo dart point, burned rock scrapers, lithic debris, and cores. The initial evaluation concluded that the site was not eligible for designation as a SAL or listing on the NRHP.

5.2 SURVEY RESULTS

Three review areas were identified within the proposed ROW. One review area contained a first-order tributary of Cibolo Creek (Review Area 3), and two were located in the vicinity of HDD locations; one located southwest and one located northeast of Cibolo Creek (Review Areas 1 and 2). The streams were identified as "Waters of the US" by desktop review and ecological field survey conducted prior to the commencement of the cultural resources survey. No other potentially jurisdictional streams were identified during the field efforts.

5.2.1 Review Area 1 (Southwestern HDD Point)

Review Area 1 was located along the slopes and upper terrace northeast of Cibolo Creek (Photo 5-1). Ground surface visibility was considered poor, ranging between 20 and 40 percent within the proposed ROW due to the presence of dense grasses and sticker burrs. Vegetation within the review area and near the creek consisted of a healthy crop of grass burrs, large pecan trees, forbs, and mesquite. Soils mapped within the review area consisted entirely of Miguel fine sandy loam. The Miguel series are shallow sandy soils overlying sterile clays. Three shovel tests were conducted in the vicinity of the southwest HDD location yielding brown or pale brown sandy soils overlying dark brown clays or strong brown clays in a surface context. Shovel tests were terminated between 6 and 14 inches (15 and 35 cm) below surface. No cultural materials were observed during surface inspection or shovel testing conducted within Review Area 1.

5.2.2 Review Area 2 (Northeastern HDD Point)

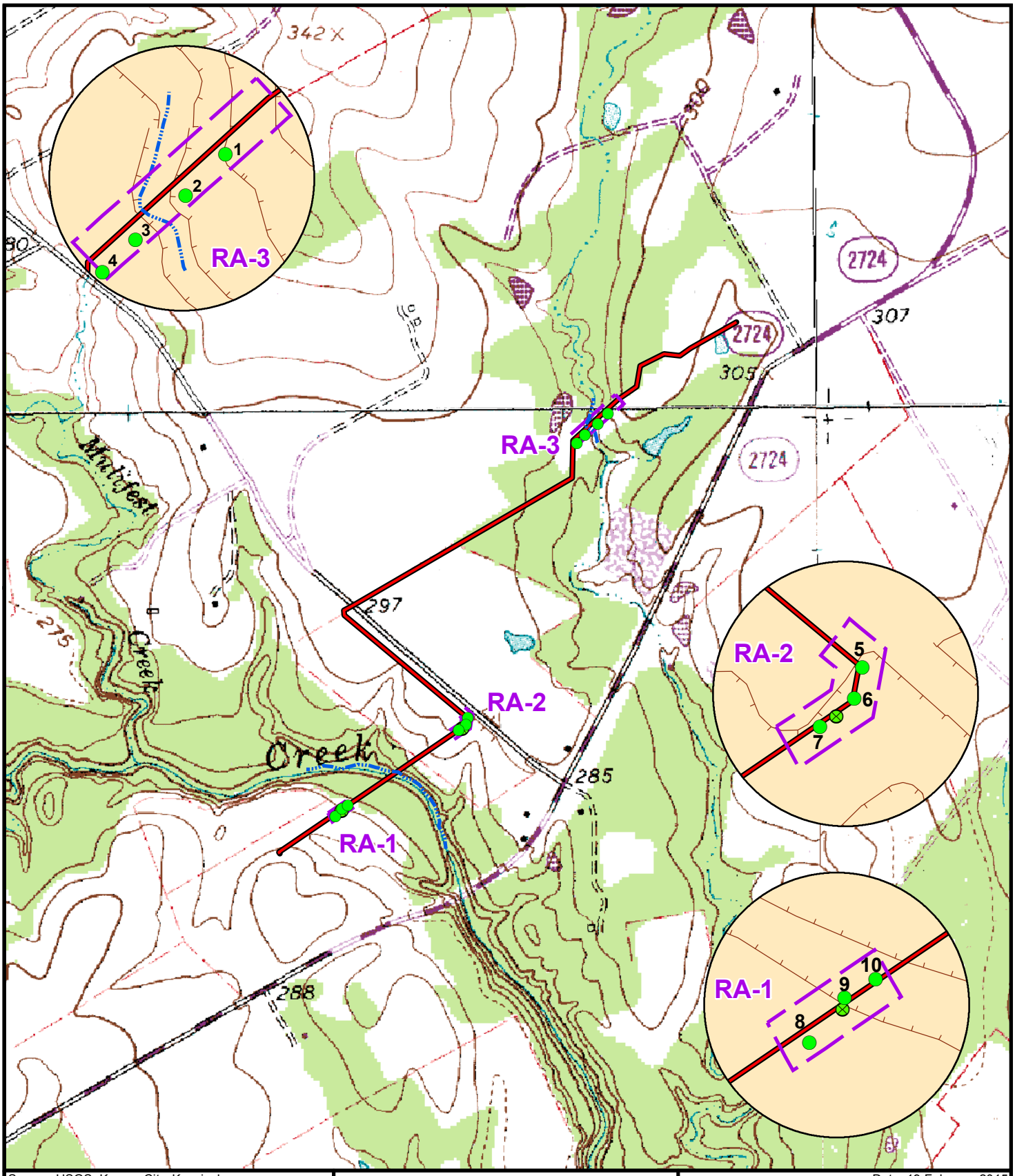
Review Area 2 was located along the slopes and second terrace southwest of Cibolo Creek (Photo 5-2). Ground surface visibility was considered poor, ranging between 20 and 40 percent within the proposed ROW due to the presence of dense grasses. Vegetation within the review area and near the creek consisted of grasses, large pecan trees, and forbs. Soils mapped within the review area consisted of Rhymes fine sandy loam and Zunker fine sandy loam. The Ryhmes series are shallow sandy soils overlying sterile clays while the Zunker series are deep sandy soils which are occasionally flooded. Three shovel tests were conducted in the vicinity of the northeast HDD location yielding grey brown sandy soils overlying dark brown clays. Shovel tests were terminated between 10 and 12 inches (25 and 30 cm) below surface. No cultural materials were observed during surface inspection or shovel testing conducted within Review Area 2.

5.2.3 Review Area 3 (First-Order Tributary of Cibolo Creek)

Review Area 3 was located south of a stock tank in the vicinity of a first-order tributary of Cibolo Creek (Photo 5-3). The stream had incised into the landscape approximately 4.9 feet (1.5 m) deep and approximately 9.8 feet (3 m) wide. Ground surface visibility was highly variable within the APE ranging between 40 and 80 percent (Photo 5-4). Vegetation within the APE consisted of variable grasses, oaks, mesquite, clover, cactus, and various forbs. Soils mapped within the review area consisted of Clareville clay loam, Gillett fine sandy loam, and Ustarents loamy soils. The Clareville series are shallow loamy clays overlying sterile clays. The Gillette series are shallow sandy soils overlying sterile clays. The Ustarents series are considered disturbed spoil and earthen fill soils associated with stream bank stabilization efforts. Four shovel tests were conducted in the vicinity of the potentially regulated stream yielding brown sandy soils overlying dark brown clays or very dark brown or black clays in a surface context. Shovel tests were terminated between 8 and 14 inches (20 and 35 cm) below surface. No cultural materials were observed during surface inspection or shovel testing conducted within Review Area 3.

5.3 RECOMMENDATIONS

Goshawk conducted a cultural resources survey consisting of an intensive surface inspection and 10 shovel tests within the proposed Ginobili-Leonard Gathering Pipeline ROW. None of the shovel tests conducted within the APE yielded positive results and no cultural materials were observed upon the ground surface. It is Goshawk's opinion that construction of the Ginobili-Leonard Gathering Pipeline, as proposed, will cause no impacts to significant cultural resources within the surveyed portions of the APE. Therefore, Goshawk recommends that construction be allowed to proceed, as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.



Source: USGS, Karnes City, Kosciusko, Texas Quadrangles.

0 250 500 1,000 Feet

0 75 150 300 Meters

GOSHAWK ENVIRONMENTAL CONSULTING, INC.

Figure 5-1
Shovel Test Locations
Karnes County, Texas

Ginobili-Leonard Unit Gathering

Date: 19 February 2015

LEGEND

- Pipeline
- Waters of the US
- Review Areas
- Negative Shovel Test
- Bore Locations

N

Photo 5-1: Review Area 1, Southwest Bore Location, Facing East Toward Cibolo Creek

Photo 5-2: Review Area 2, Northeast Bore Location, Facing North-Northeast

Photo 5-3: Review Area 3, First-Order Tributary of Cibolo Creek, Facing North

Photo 5-4: Review Area 3, Typical Surface Visibility

Ginoblili Leonard Gathering(14 NAD 1983)										
Report ST#	ST#	WP#	Easting	Northing	Depth (cm)	Soil Color	Soil Composition	Artifacts	Review Area	Comments
1	MJ1	22	609073	3208515	0-20	Very dark brown	Clay	None	3	10% surface gravels
2	MJ2	23	609050	3208491	0-25	Brown	Sandy clay	None	3	10% surface gravels
3	MJ3	24	609021	3208466	0-35	Brown	Sandy loam	None	3	10% surface gravels
					35+	Very dark brown	Clay	None		
4	MJ4	25	609002	3208447	0-30	Black	Clay	None	3	10% surface gravels
5	CH1	116	608751	3207814	0-30	Grey brown	Sandy clay loam	None	2	
					30-40	Dark grey brown	Clay	None		
6	CH2	117	608747	3207799	0-25	Grey brown	Sandy clay loam	None	2	
					25-30	Dark grey brown	Clay	None		
7	CH3	118	608730	3207785	0-25	Grey brown	Sandy clay loam	None	2	
					25-30	Dark grey brown	Clay	None		
8	CH4	119	608447	3207587	0-30	Brown	Sandy loam	None	1	
					30-35	Dark brown	Clay	None		
9	CH5	120	608462	3207606	0-15	Pale brown	Sandy loam	None	1	
					15-20	Dark brown	Clay	None		
10	CH6	122	608475	3207614	0-15	Strong brown	Clay	None	1	

6.0 HB UNIT #1H, #2H, AND #3H ACCESS ROAD

Goshawk conducted a cultural resources survey of the proposed ±936-foot (285-m) HB Unit #1H, #2H and #3H Access Road ROW in Gonzales County, Texas. A single review area was identified within the proposed ROW, containing two streams potentially under federal jurisdiction. The cultural resources survey, including shovel testing and surface inspection, was conducted within the area of review which totaled approximately 1.3 acre (0.6 ha). The review area encompassed first-order and second-order tributaries of Rocky Creek. The field investigation was conducted by Goshawk archeologist Reign Clark with Bear Aspra on 10 December 2014.

The HB Unit #1H, #2H, and #3H Access Road APE was located approximately 3.5 miles (5.5 km) to the west of the town of Shiner, Texas. From its southern terminus, the APE traversed in a generally northeasterly direction crossing nearly level terrain and traversing a first-order tributary of Rocky Creek. The APE then veered to the northwest still crossing nearly level terrain and a second-order tributary of Rocky Creek, and then reaching its northwestern terminus. Vegetation within the ROW consisted of acacia, hackberry, cedar elm, mesquite, and various forbs. The APE was located on the Shiner, Texas, United States Geological Survey (USGS) topographic quadrangle (Figure 6-1). The dominant local land use was for rangeland and oil and gas development.

6.1 ARCHIVAL RESEARCH

Archival research conducted using the Atlas online database failed to identify any previously recorded archeological sites situated within a 1.2-mile (2.0-km) radius of the APE. The nearest site (41GZ237) was located approximately 2.5 miles (4.0 km) northwest of the APE and will be discussed in detail below. The ROW is located within the Cuero 1 NRD. Designated in 1974, the Cuero I NRD encompasses 580,000 acres (235,000 hectares) along the Guadalupe River Basin. It was created to define and preserve cultural resources in a region threatened by a proposed reservoir. Work conducted in 1972 to 1973 resulted in the documentation of 352 significant prehistoric and historic sites spanning 9,000 years. The sites ranged in age from Late Paleoindian to early Anglo-American settlements that date to the 1820's to the 1830's. According to the Atlas, the nearest NRHP-listed property is the Saints Cyril and Methodious Church located in the town of Shiner, Texas approximately 3.4 miles (5.4 km) east of the APE.

6.1.1 41GZ237

Site 41GZ237 was recorded in 2011 as part of the Koska Farm Project. The site was initially recorded as a 1950's house with associated outlying buildings. The site measured 360 feet (110 m) north-to-south and 230 feet (70 m) east-to-west. This site was located 2,297 feet (70 m) south of CR 360. Documented features included two barns, a tractor garage, cattle pens, a tool shed, and a residential living structure. Historic artifacts observed included square bottle bottoms, circular bottle bottoms, solarized glass, metal fragments, unidentified tin foil, scalloped edge blue transferware, mochaware, whiteware and stoneware. The initial evaluation concluded that the site was not eligible for designation as a SAL or listing on the NRHP.

6.2 SURVEY RESULTS

A single review area was identified within the proposed HB Unit #1H, #2H, and #3H Access Road ROW containing a segment of an unnamed first-order tributary of Rocky Creek and a second-order tributary of Rocky Creek. The streams were identified as "Waters of the US" by desktop review and ecological field survey conducted prior to the commencement of the cultural resources survey. No other potentially jurisdictional streams were identified during the field effort.

6.2.1 Review Area

The review area encompasses two unnamed tributaries of Rocky Creek; a southern first-order tributary and a northern second-order tributary. The streams were marginally channelized within the area of review and were overgrown with grasses and small shrubs. Soils within the review area were mapped entirely as Greenvine clay. The Greenvine series are in-situ clays that have sustained disturbances in portions of the APE.

6.2.1.1 Southern Stream

The southern stream was a first-order tributary of Rocky Creek that had incised into the landscape between 12 and 20 inches (30 and 50 cm) in depth and between 16.4 and 20.6 feet (5 and 6 m) in width (Photo 6-1). Ground surface visibility was considered poor due to the presence of leaf litter and dense grasses (Photo 6-2). Vegetation in the vicinity of the stream included acacia, hackberry, cedar elm, mesquite, various forbs, and grasses. Four shovel tests were conducted in the vicinity of the stream yielding black clay soils or mixed fill. The tests were terminated between 2 and 12 inches (10 and 30 cm) below surface. No cultural materials were observed during surface inspection or shovel testing conducted in the vicinity of the stream.

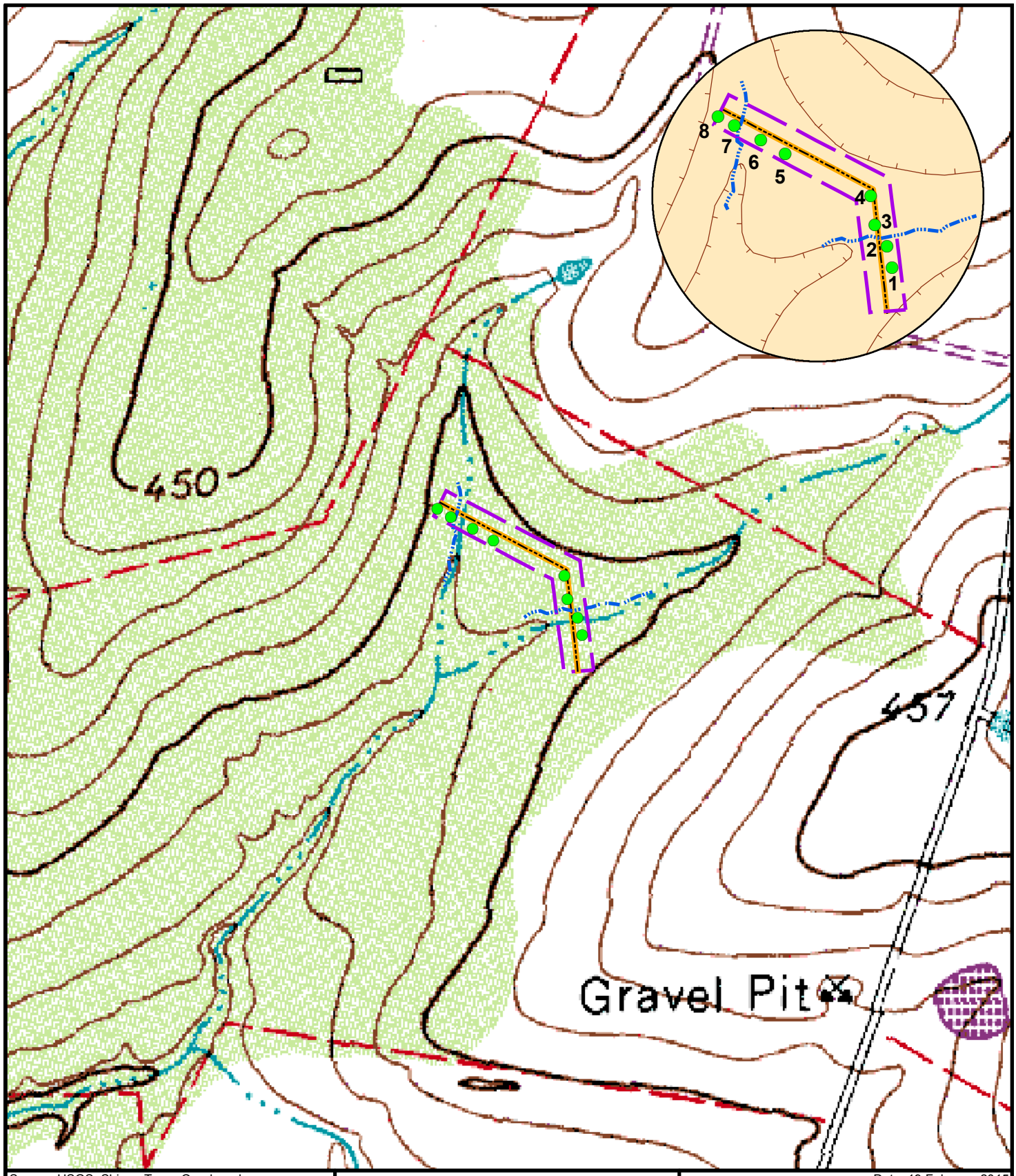
6.2.1.2 Northern Stream

The northern stream was a second-order tributary of Rocky Creek that had incised into the landscape between 24 and 39 inches (0.6 and 1 m) in depth and between 9.9 and 13.1 feet (3 and 4 m) in width (Photo 6-3). Ground surface visibility was considered poor due to the presence of leaf litter and dense grasses. Vegetation in the vicinity of the stream included acacia, hackberry, cedar elm, mesquite, various forbs, and grasses (Photo 6-4). Four shovel tests were conducted in the vicinity of stream yielding very dark brown loamy soils overlying black clay or black clay soils in a surface context. The tests were terminated between 4 and 12 inches (20 and 24 cm) below surface. No cultural materials were observed during surface inspection or shovel testing conducted in the vicinity of the stream.

6.3 RECOMMENDATIONS

Goshawk conducted a cultural resources survey consisting of an intensive surface inspection and eight shovel tests within the proposed HB Unit #1H, #2H, and #3H Access Road ROW. None of the shovel tests conducted within the APE yielded positive results and no cultural materials were observed upon the ground surface. It is Goshawk's opinion that construction of the HB Unit #1H, #2H, and #3H Access Road, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed, as planned. In the unlikely event that cultural resources (including human

remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.



Source: USGS, Shiner, Texas Quadrangle.

Date: 19 February 2015

0 125 250 500 Feet

0 37.5 75 150 Meters

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Figure 6-1
Shovel Test Locations
Gonzales County, Texas

HB Unit #1H
HB Unit #2H
HB Unit #3H

LEGEND

- Proposed Access Road
- Waters of the US
- Review Areas
- Negative Shovel Test

N

Photo 6-1: Southern Stream within Review Area, Facing South

Photo 6-2: Typical Surface Visibility within Review Area

Photo 6-3: Northern Stream within Review Area, Facing East

Photo 6-4: General Overview of Vegetation within Review Area

HB Unit #1H, #2H, and #3H Access Road ST Data (NAD 83, Zone 14)										
Report ST#	Field ST#	WP#	Easting	Northing	Depth (cm)	Soil Color	Soil Texture	Stream #	Artifacts	Comments
1	RC1	86	671071	3257196	0-50	Very dark brown	Clay loam	2	None	
					50-60	Black	Clay		None	
2	RC2	87	671066	3257208	0-35	Very dark brown	Loamy clay	2	None	
					35-40	Black	Clay		None	
3	RC3	88	671056	3257224	0-20	Black	Clay	2	None	Homogenous
4	RC4	89	671054	3257239	0-20	Black	Clay loam	2	None	
					20-30	Black	Clay		None	
5	RC5	90	670940	3257271	0-10	Black	Clay	1	None	Ultra Dense
6	RC6	91	670932	3257287	0-15	Black	Clay loam	1	None	
					15-30	Black	Clay		None	
7	RC7	92	670909	3257316	0-20	Mixed	Fill	1	None	Fill on slope below well pad
					20-25	Dark brown	Clay		None	
8	RC8	93	670897	3257319	0-20	Mixed	Fill	1	None	Fill on slope below well pad
					20-25	Dark brown	Clay		None	

7.0 DISCUSSION

The goal of the cultural resource surveys was not only to locate and record sites, but to provide conclusions and site recommendations based on NRHP criteria of significance (36 CFR 60.4), and the requirements of Section 106 and 36 CFR 800. According to the NRHP, "The quality of significance in American history, architecture, archaeology, engineering, and culture is present in district, sites, materials, workmanship, feeling, and association that:

a. are associated with events that have made a significant contribution to the broad patterns of our history;
b. are associated with the lives of persons significant in our past;
c. embody distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
d. have yielded, or may be likely to yield, information important in prehistory or history."

8.0 CONCLUSIONS AND RECOMMENDATIONS

During the month of December 2014, Goshawk conducted two cultural resources surveys within the Eagle Ford Play, Central Eagle Ford Zone. The project areas subjected to cultural resources investigations included the proposed Ginobili-Leonard Gathering Pipeline and HB Unit #1H, #2H, and #3H Access Road. During the survey of each project, shovel tests were placed within each review area near the streams and upon the adjacent slopes or within the review radius of previously recorded archeological sites according to due diligence protocol. Shovel testing and surface survey resulted in the documentation of no significant cultural deposits within the survey areas.

Based on the results of investigations, it is Goshawk's opinion that no significant cultural resources will be impacted by construction within the surveyed portions of the ROWs. Goshawk recommends that the projects be allowed to proceed as planned with the caveat that construction be limited to the existing surveyed ROWs. In the unlikely event cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted and both the USACE and an archeologist should be notified.

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